

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference 027830-4326	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/US 03/19174	International filing date (day/month/year) 18.06.2003	Priority date (day/month/year) 03.01.2003
International Patent Classification (IPC) or both national classification and IPC B60N2/02		
Applicant JOHNSON CONTROLS TECHNOLOGY COMPANY ET AL		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 26.07.2004	Date of completion of this report 22.03.2005
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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/US 03/19174**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-20 as originally filed

Claims, Numbers

1-25 received on 18.02.2005 with letter of 18.02.2005

Drawings, Sheets

1/11-11/11 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-20
	No: Claims	21-25
Inventive step (IS)	Yes: Claims	1-11
	No: Claims	12-25
Industrial applicability (IA)	Yes: Claims	1-25
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

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Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1 Reference is made to the following documents:

D1: US-A-5 717 300 (TAYLOR MARC ET AL) 10 February 1998
D2: US-A-4 547 718 (RATZEL RUEDIGER ET AL) 15 October 1985
D3: US-B-6 460 9341 (LANGER JOCHEN ET AL) 8 October 2002

2 Independent claims 1 and 8

2.1 Best prior art

Document D1 discloses a control system for a vehicle seat comprising a seat base motor to move the seat base longitudinally, a manually reclinable backrest and a control circuit activating the seat base motor in response to the movement of the backrest.

2.2 Problem

The known system provides only an on/off possibility, not allowing a progressive and/or partial movement of the seat base. The system does not allow an adjustment of the seat base, but only a complete movement from the totally forward position to the totally backward position.

2.3 Solution

Providing a control system that relates the amount of longitudinal movement of the seat base with the amount of angle of inclination of the backrest.

These features are neither known nor rendered obvious by the available Prior Art. Therefore independent claim 1 and 8 meet the requirements of Articles 33(2) and (3) PCT.

3 Dependent claims 2-7 and 9-11

Claims 2-7 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Claims 9-11 are dependent on claim 8 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

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4 Independent claim 12

- 4.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 12 does not involve an inventive step in the sense of Article 33(3) PCT.
- 4.2 The document D1 is regarded as being the closest prior art to the subject-matter of claim 12, and discloses a control system for a vehicle seat.

The subject-matter of claim 12 therefore differs from this known control system in that, when the seat back pivots forward, the seat base moves backwards, instead of forward.

The problem to be solved by the present invention may therefore be regarded as remembering a user's seat position.

The solution proposed in claim 12 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

The feature "seat base moving backwards, instead of forward" is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed.

- 4.3 A problem similar to the one solved in the independent claims 1 and 8, i.e. relating the amount of longitudinal movement of the seat base with the amount of angle of inclination of the backrest, is neither solved nor stated in claim 12, since no relation between such movements is cited.

5 Dependent claims 13-20

- 5.1 Dependent claims 13-15 and 17-20 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see documents D1, D2 and D3 and the corresponding passages cited in the search report.

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5.2 The combination of the features of dependent claim 16 is neither known from, nor rendered obvious by, the available prior art.

6 Independent claim 21

6.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 21 is not new in the sense of Article 33(2) PCT.

6.1 The document D1 discloses (Abstract; column 6, lines 4-61; figures 1, 2):

a control system for a vehicle seat (1) comprising a seat base (2) motor (7) configured to move a seat base (2) forward and backward, a manual recliner mechanism configured to adjust an angle of inclination of a seat back (3) and a control circuit (fig. 3) configured to move the seat base (2) backward in response to an incline of the seat back (3).

6.2 Similar objection is raised on the basis of either document D2 or D3 in place of D1.

6.3 A problem similar to the one solved in the independent claims 1 and 8, i.e. relating the amount of longitudinal movement of the seat base with the amount of angle of inclination of the backrest, is neither solved nor stated in claim 12, since no relation between such movements is cited.

7 Dependent claims 22-25

7.1 Dependent claims 22-25 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, see documents D1, D2 and D3 and the corresponding passages cited in the search report.

1. A control system for a vehicle seat comprises:
a seat base motor configured to move a seat base forward and backward;
a manual recliner mechanism configured to adjust an angle of inclination of a seat back; and
a control circuit configured to move the seat base forward or backward in response to a change in the angle of inclination of the seat back, wherein the amount of movement of the seat base is dependent on the amount of the change in the angle of inclination of the seat back.
2. The control system of claim 1 wherein the control system is configured to move the seat back and the seat base at a ratio of approximately 1 degree of inclination of the seat back to between approximately 1.5 mm to approximately 3 mm of forward or backward movement of the seat base.
3. The control system of claim 1 wherein the control circuit is configured to move the seat base forward in response to a recline of the seat back and to move the seat base backward in response to an incline of the seat back.
4. The control system of claim 1 further comprising a sensor that measures a position of the seat back.
5. The control system of claim 4 wherein the sensor is a potentiometer.
6. The control system of claim 1 wherein the control circuit is configured to begin moving the seat base between approximately 0.5 seconds and approximately 2 seconds after the seat back has stopped moving.
7. The control system of claim 1 wherein the control circuit is configured to begin moving the seat base at least approximately 1 second after the seat back has stopped moving.

8. A control system for a vehicle seat comprising:
a seat base motor configured to move a seat base forward and backward;
a manual recliner mechanism configured to adjust an angle of inclination of a seat back; and
a control circuit configured to move the seat base in response to movement of the seat back, the seat back and the seat base being moved at a ratio of approximately 1 degree of inclination of the seat back to between approximately 1 mm and approximately 4 mm of forward or backward movement of the seat base.
9. The control system of claim 8 wherein the ratio is approximately 1 degree of inclination of the seat back to approximately 1.5 mm of forward or backward movement of the seat base.
10. The control system of claim 8 wherein the control circuit is configured to move the seat base forward in response to a recline of the seat back and to move the seat base backward in response to an incline of the seat back.
11. The control system of claim 8 wherein the control circuit is configured to begin moving the seat base between approximately 0.5 seconds and approximately 2 seconds after the seat back has stopped moving.

12. A vehicle seat having a control system comprising:
- a track;
 - a seat base coupled to the track;
 - a seat base motor configured to move the seat base forward and backward;
 - a seat back pivotally coupled to the track;
 - a manual recliner mechanism configured to pivot the seat back in relation to the track;
 - a seat base input device configured to receive operator commands for movement of the seat base; and
 - a control circuit configured to receive the operator commands from the seat base input device and to control the seat base motor;
- wherein the control circuit is configured to move the seat base backward when the seat back pivots forward; and
- wherein the control circuit is configured to move the seat base alone in response to receiving a command from the seat base input device.
13. The vehicle seat of claim 12 wherein the control system is configured to move the seat base between approximately 1.5 mm and approximately 3 mm in response to each approximately 1 degree movement of the seat back.
14. The vehicle seat of claim 12 further comprising a sensor that measures a position of the seat back, wherein the control circuit is configured to move the seat base to a position that is proportional to the position of the seat back.
15. The vehicle seat of claim 14 wherein the sensor is a potentiometer.
16. The vehicle seat of claim 14 wherein the control circuit is configured to move the seat base forward by activating the seat base motor for a first amount of time and the control circuit is configured to move the seat base backward by activating the seat base motor for a second amount of time, wherein the first and second amounts of time are different.
17. The vehicle seat of claim 12 wherein the control circuit is configured to move the seat base forward when the seat back pivots backward.

18. The vehicle seat of claim 12 wherein the control circuit is configured to begin moving the seat base between approximately 0.5 seconds and approximately 2 seconds after the seat back has stopped moving,

19. The vehicle seat of claim 12 wherein the manual recliner mechanism is activated by a handle.

20. The vehicle seat of claim 12 wherein the control circuit includes a microprocessor.

21. A control system for a vehicle seat comprises:
a seat base motor configured to move a seat base forward and backward;
a manual recliner mechanism configured to adjust an angle of inclination of a seat back; and
a control circuit configured to move the seat base backward in response to an incline of the seat back.

22. The control system of claim 21 wherein the control system is configured to move the seat base backward between approximately 1.5 mm to approximately 3 mm in response to each approximately 1 degree of inclination of the seat back.

23. The control system of claim 21 further comprising a sensor that measures a position of the seat back.

24. The control system of claim 21 wherein the control circuit is configured to begin moving the seat base between approximately 0.5 seconds and approximately 2 seconds after the seat back has stopped moving.

25. The control system of claim 21 wherein the control circuit is configured to begin moving the seat base at least approximately 1 second after the seat back has stopped moving.